

MARCH  
APRIL

# LIST

1987

March- April Double Issue Price \$3.00

This double issue includes a special disk drive issue.

## In This Issue

March Meeting Notes	1
February Meeting Notes	2
The Oliger 2068 Safe Disk Drive Interface Minireview	
By: Bob Gilder	3
Disk Drive Setup..... By: Bob Gilder	4
minireviews..... By: N. Pashtoon	7
Letter Quality Printing..... By: Paul Donnelly	8
For Your Information.....	9
Random Access and Sequential Data file for	
the Portugese System..... By George Gilder	11
Bankswitching, etc..... Part II,..... By: Dr. Watson	15
Letter.....	23

NOTE: The May 17  
Meeting at Berb's  
is a Swap meet. So Bring in  
your goodies.

### March Meeting Notes

Myles Cohen was elected as the President of the LIST Group. Congratulations Myles and good luck.

Nazir P. and Paul D. demoed the Disciple interface with the TS2068. In order to use the interface a twistor and a Spectrum emulator is required. The demo illustrated how the NMI save capability can be effectively used to transfer existing Spectrum software to disks. The LIST's invited speaker was Mark Smith, who explained the circuit design aspects of his Z8 controller based data acquisition system for the QL. He also demonstrated a speech synthesizer in conjunction with his Z8 based system. His talk was very interesting and well received by the group.

The next meeting of the Group was postponed till April 26. Since the library is not available Harvey Rait volunteered his place.

# LIST

The February 1987 meeting of List was held at Christ Lutheran Church in Northport. There were 14 members in attendance.

## OLD BUSINESS

**Membership:** Paul Donnelly announced that, with the 4 renewals at the meeting, one half of the membership had renewed, so far. He suspects that a significant number of members were waiting for the January issue of Listing and that these renewals will begin to arrive shortly. He noted that we had already received questions from people who thought they had missed January.

**Tapes -** Harvey R. brought along tape # 6 and a copy was provided to John P., a new member. Harvey also contributed a program to the QL library. His program, a cartridge copier, will be the seed for Library cart # 2.

**Newsletter:** Nazir expressed his chagrin at being pressured to publish some materials submitted by members. It was the consensus that he, or any edition of Listing, should have complete editorial authority. As material is received, the editor plans, in advance, into which issue it will go. Once the full 6 pages is reached, it is extremely difficult to rearrange the NL. Nazir noted that due to the high interest in QL, there was enough material to preplan the March and April issues. However, he still needs material for the subsequent months.

The January-February issue was assembled by the NL committee prior to the meeting and distributed to those present. You may have noticed the use of a laser printer for some of the material.

## NEW BUSINESS

**Stoney MCM.** noted that Tom Beut will be a U.S. Distributor for Quanta. Quanta is a U.K. user group with 6 megabytes of "Public Domain" programs. "PP" is in quotes because Stoney notes there are apparently fees involved in some of the software (shareware). Stoney will bring what information he has next month.

**Martin H.** noted a number of shows which might be of interest to members. Discussion of the Trenton and 2nd TS Computerfest had the following results:  
1. **Trenton -** Stoney M. Will contact Trenton State College to see if we can obtain a room and 2 hour slot to demonstrate TS hardware and Software. Other local TS groups will be invited to join our Forum- April 18-19.

**INDIANAPOLIS - 2ND TS FEST.** It was agreed that List would send in the \$10 for a group table. Manning is yet to be resolved.

**NOTE:** Out of town members - if you are planning on attending the Fest, this is your chance to participate in List. Please let us know if you can help man the table for an hour or so. We will have filers to hand out and perhaps library tapes, to give to new members (who sign up at show). Members who help out will be able to obtain these at less expense, also (i.e. no mailing). May 2-3.

**Chuck R.** announced receipt of filers from RMG enterprises and Sharp's. He also reminded members that nominations and elections must be held at the March meeting. This is your chance to become an officer of List. Ask a friend to nominate you! Chuck also noted that we may have to find a new meeting site.

## FOR SALE

SEARS 600 serial printers. Equivalent to Brothers EP44.  
**ONLY \$108.00 (cash)**  
Works directly with QL with no additional interfacing.  
Call Harvey Rait 516-791-6247 for pick up arrangements.

*NOTE: TO LIST MEMBERS who come to meetings: LIST in urgent need of an Editor. So let us reach a decision in the May 17 meeting.*

## LETTER

### GENERAL

There was some spirited discussion about the merits of TS hardware. Many members noted significant problems with their QL Kit microdrives. Half of those present had already sent their machine back for repairs, and the other half had had problems.

### DEMONSTRATION

Steve Kaye demoed his "super" ZX81 system. Steve has ZXLR8 and a number of other drives, on eptom, along with 64K, inside a customized DKtronics keyboard. ZXLR8 is a Q-save type utility which allows rapid file transfer.

Steve also showed us his I/O board which was used by his students for a solar water heater project. The board is 8255 based and has 8 inputs and 21 outputs. Steve obtained and encapsulated thermistat which were tied into the board for temperature monitoring. Temperatures could be resolved to one part in 255.

Next meeting - 2nd Sunday in March at Huntington Public Library, unless otherwise announced.

**HURRAY! HUZAH! TRUMPET BLARE!  
EXCELLENT MY DEAR WATSON!**

At last! Like a tear from the pentagon, some anonymous person has at last spilled some sensitive secrets in the public interest. Let me be the loudest in praising that person's courage. Secret person, I know who you are. Please contact me. I will guarantee your anonymity. I will read and burn your communications. My previous efforts to reach you were aborted.

Actually having a bank switching system working has some real advantages. The information provided by Dr. Watson is precious, but some of it is outdated. I will be specific about the data which is different.

The SYSDON table group description is correct, but a clarification couldn't hurt. Two routines share a common most significant byte at 0009. One address is stored backwards: 15b055/15b which is different.

TIMEY spent a lot of time having a bank switching system that actually adds to the already complete protocol existing in code. The EXBU (Expansion Bank Unit) is a better name for plug-in expansion units which may not be intelligent or ROM.

The mentioned BEU is a TIMEY concept which is still fiction in reality. The communication ports are also a TIMEY plan, having no reality. The concept of memory mapped registers is closer to being true, but the mentioned HOLD register is a TIMEY implementation which also doesn't exist--and is not needed. I know!

The DRTY chain method of finding attached devices is their selection, though ID address selection by dip-switch is better when you don't have control of the market.

The separation of fact and fiction (TIMEY dreams) is important if we keep the USERS' interests foremost in our minds. It is folly to blindly follow TIMEY's lead. The implementation of hardware, and ability to interface to non-TIMEY type peripherals are problems we don't need to confound. Let's keep it simple!

I know Dr. Watson will agree on this point, since he has taken the bull by the horns at some risk. Mr. Watson, confirm please?

The recovery of extended bank switching for TS2066 users has some serious legal considerations. These have not been lost on me, so I have an urgent appeal.

**PLEASE! LET IT HAPPEN!**

William J. Pedersen  
1120 Merrifield S.E.  
Grand Rapids, MI 49507



# LIST

## The Oliger System - minireview

### THE OLIGER 2068 SAFE DISK DRIVE INTERFACE MINI REVIEW

The Oliger SAFE (Simple and Fast Extended) disk drive interface is the most versatile interface of all the 2068 disk drive interfaces I have become familiar with. It will support any floppy disk drive on the market, 3", 3 1/2", 5 1/4" and 8". Drives may be single density, double density or quad density; single side or double side regardless of head switching time. Any of the above drive parameters that do not meet the default values, can be changed with simple commands (LET T=40 - set tracks to 40 ). One to four drives may be accommodated (0 -3) within this system.

Data access is fast, apporximately 4 seconds from the time the LOAD command is entered and for the program to be up and running. No special hardware is required to access SPECTRUM or TIMEX 2068 programs and best of all; the NMI save. Just press a button on the interface and your program is saved and verified at any point within your program. Using the "MAGIG BUTTON" will allow you to save any of those Spectrum programs to disk without using a header reader program.

The Oliger SAFE INTERFACE can be obtained in either kit form or fully assembled. Please understand that the interface consists of two printed circuit assemblies which must be inserted into two slots of an additional MOTHER BOARD which plugs into the rear edge connector of the 2068. Connectors can be obtained gold plated for a small fee and I recommend that you order yours gold plated.

Perhaps the only drawback to using this system is that only eight files of 50K each can be saved to a DSDD disk. As for myself, this does not pose a problem. When I use TASWORD II, I save not only the file, but the word processor itself. In other words, I do not have to first load in the word processor and then load in the file. Both load together within 4 seconds and you can start editing or printing additional copies at once.

The approximate cost for the OLIGER SAFE DISK OPERATING INTERFACE and MOTHER BOARD is:

Assembled and tested \$180.00  
Kit form \$150.00

Perhaps when time is available I can provide a more detailed review of the OLIGER system and the AERCO system .

Bob Gilder

## DISK DRIVE SET-UP

By: Bob Gilder

There are some very good buys on 5 1/4 inch disk drives these days since IBM has switched to 3 1/2 inch drives for their new computer systems. I realize that you may be reluctant to purchase surplus disk drives not knowing for shure whether they will operate properly with your disk operating system. Perhaps I can help by providing an explanation of relevant disk drive data.

The three TS 2068 disk operating systems I am most familiar with are:

- 1- Aerco FD-68
- 2- Oliger SAFE
- 3- Zebra disk system (original single drive)

All of the above disk operating systems have several things in common with each other:

### A - HEAD STEPPING TIME

Default setting of the head stepping speed - 6ms (ms = milliseconds or 0.001 seconds). Head stepping speed is also called track access time. The IBM standard is 6ms. Request the track access time before you purchase the drive.

When the drive operates, it radially steps from one track to the next track. Common step rates for 5 1/4 inch drives are 6, 12, 20 and 30 milliseconds.

The Oliger system allows the operator to change head stepping time for your drives with the following command: LET /h=n (n= head access time).

Aerco will customize the disk operating system ROM for you when you advise them of your individual disk drive model and/or relevant data.

### B - SHUGART COMPATABLE

SHUGART COMPATABLE is the 34 pin, printed circuit edge connector which connects with the ribbon cable edge connector from your disk drive interface. Before you purchase a drive, ask about this compatability.

Most modern disk drives use the 34 pin male connector, whether they are SD (single density), DD (dual density) or QD (quad density) and/or SS (single side) or DS (dual side). Zebra systems defaults to single side drives (see John Bells mod for using dual side drives in the Zebra system, LIST summer 1986). Aerco will customize your system accordingly. Oliger will allow the user to access any drive with a command: LET /s=n, (n=1 or 2).

# LIST

C - 40 tracks/48 TPI (TPI = tracks per inch).

Aerco, Oliger and Zebra disk operating systems support 40 track drives. You can use 80 track drives on the above systems, however, they will read/write data to every other track for a total of 40 tracks. There are some 35 track drives used in other systems.

Aerco again will customize your operating system for track compatibility and Oliger allows track change with the LET /t=n, (n = number of tracks).

I will only purchase drives with 6 ms head stepping time since this is the fastest access time Timex disk operating systems support.

Only purchase drives which are guaranteed and shipped to you in factory sealed cartons. There is no sense in buying a drive at a cheap price only to find that it does not function properly and the seller will not accept returned drives and/or refund your purchase.

Check the pages of "Computer Shopper" and "Nuts and Volts" publications for really great buys.

Some additional information you may be interested in are as follows:

TPI = the number of Tracks Per Inch.

Hard Drives - 5 to 10 times faster than floppy drives. The disk in the hard drive is sealed to the drive head and cannot be removed.

Drive Type Sizes: 3", 3 1/2", 5 1/4" and 8".

## DISK DRIVE SET-UP

Termination Resistors: Normally each disk drive has plug-in terminating resistors (Amdek, Amdisk III, 3" drives have DIP switches) of 150 ohms. On a single disk drive system, that drive must be terminated. On multiple drive systems, only the last drive or the drive placed at the furthest point on the drive cable must be terminated. As a rule, only one drive must be terminated to prevent ringing. The terminating resistors are usually 14 or 16 pin DIP devices which resembles an IC. The resistance value will appear on the DIP body.

## FUNCTION SWITCHES, SHUNTS OR JUMPERS

Function switches must be placed differently (or shunts cut) for each drive. Drive #1 will have the switch set for "A or 0". If the drive has shunts, then cut shunts "B, C & D" or "1, 2 & 3". Only one drive must be assigned to one drive name. The ID will usually be DS 0-3 or DS A-D. DS = Drive Select.

If you are only operating one drive, MX must be on or the shunt must be intact. For multiple drive systems, MX is open.

# LIST

Head Loading switches or shunts : On most drives there is a multiple choice for head loading. The choice allows having the motor operate when a drive is selected or motor on regardless of drive selection.

- 1- Drive Select =HS
- 2- Motor On =HM

Before I cut any shunts, I remove the shunt package (DIP) and use #22 solid wire jumpers in place of shunts. Remove the jumpers until proper drive operation is obtained, then if you wish you can either leave them in or cut the proper shunts and replace the jumpers with the shunt package.

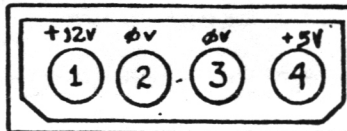
Set up each drive as a single drive first (0 or A) to assure that they operate. Then change the appropriate switches or shunts to allow multiple drive operation.

## POWER SUPPLY CONNECTOR

The standard power connector for floppy drives is a 4 pin connector, AMP 1-480424-0. Pin assignments are:

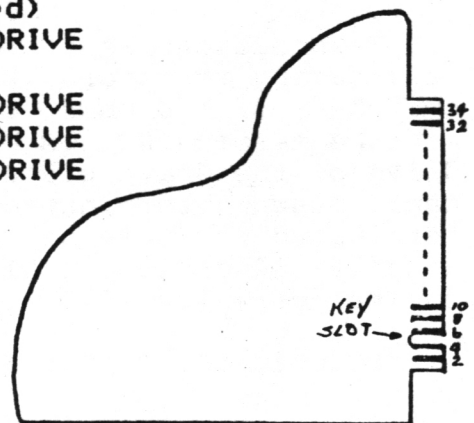
### 4 PIN POWER CONNECTOR (AMP P/N 350211-1)

- PIN 1 +12 VDC
- PIN 2 GROUND
- PIN 3 GROUND
- PIN 4 + 05 VDC



## EDGE CONNECTOR PINOUTS

PIN NO.	FUNCTION
02	HEAD LOAD/SPARE (not used)
04	IN USE/HEAD LOAD (not used)
06	DS4 - DRIVE SELECT 4, "D" DRIVE
08	INDEX SELECTOR PULSE
10	DS1 - DRIVE SELECT 1, "A" DRIVE
12	DS2 - DRIVE SELECT 2, "B" DRIVE
14	DS3 - DRIVE SELECT 3, "C" DRIVE
16	MOTOR ON
18	STEP DIRECTION
20	STEP PULSE
22	WRITE DATA
24	WRITE GATE
26	TRACK ZERO PULSE (T00)
28	WRITE PROTECT
30	READ DATA
32	SIDE SELECT/RESERVED (not used)
34	READY



NOTE: All odd numbered pins are ground returns.



# LIST

## minireviews By: NAP

### CST Disk Interface

I got the CST Disk I/F from Quantum Computing for the User Group Special of \$125.00, and have used it for two months, with the Philips quad density drives. It is an excellent system, without a single hitch or problem. The interface plugs into the left side of the QL, extending the width of the machine by approximately two inches. But since the protrusion has black plastic cover, it perfectly matches the QL. A 34 way male connector is provided on the left end, to which a 34 way cable from the drives is connected. The nice feature of the I/F is that it runs any 3", 3.5" or 5.25" drives and in any combination or densities. The software is resident on an EPROM on the I/F. The other excellent feature is that the head stepping rate as well as startup time can be setup by the user.

The I/F is easy to use, and beside the normal disk commands, the EPROM provides quite a few of the Toolkit commands, including RAMdrive. The manual is 32 pages, and provides examples of the various commands. The disk commands are straight forward. Instead of using `mdv1_`, one types in `flp1_` and that will put you in the driver's seat. When you copy software from a microdrive for example QUILL to disk, if the software wants to make microdrive accesses you can redirect all such references by typing `flp_use mdv`. From that moment onwards you will use all the regular `mdv` commands (instead of `flp_`) and the disk will respond to you.

Incidentally, I and a few LIST members (the Connecticut Subgroup) had a chance to test and install a DELTA Disk I/F (\$125.00). My opinion is that the CST Disk I/F is more versatile, and a better value for the money.

### The DISCIPLE Disk I/F

Acknowledgements: Thanks to QUANTUM COMPUTING for sending the DISCIPLE I/F for evaluation and compatibility testing with the TS2068. Thanks also to member Anthony C. Brooks for supplying me with the system disk for the I/F.

Quantum Computing sent me the DISCIPLE I/F to be checked for compatibility with the TS2068. The disk I/F was tested with a TS2068 equipped with a twistor and a Spectrum Emulator. I am happy to report that it works fine, as I demonstrated the unit in the Feb. LIST meeting. By the way the unit refused to work with the Portuguese TC2068. I did not have a chance to investigate it further.

The DISCIPLE Disk Interface comes in a black plastic box, similar to, but larger than the Sinclair Interface I. Beside being a disk I/F, it has two Sinclair standard joystick interfaces (or one Kempston joystick I/F), a parallel printer I/F, networking capability, and an NMI SAVE capability, as well as a warm disable switch. The warm disable switch gives you the ability to run other hardware, without contention from the DISCIPLE, or the necessity to disconnect the I/F (a nice touch!).

The interface has an EPROM, but the original system configuration program is supplied on tape (only a single copy), very poor recording and low quality tape. Tried as I may, I could not load the tape. I finally traced and located Anthony Brooks, who had gone through similar hassles weeks before me, had written to England, and had gotten the software on disk. He was very gracious in sending me the system disk promptly (Thanks!). From the system disk you can configure for any size, # of tracks, stepping rate, etc. The disk commands are easy to use. All you do is type, say, `LOAD D1 "prog_name"`, etc. The 32 page manual accompanying the system provides good examples and explanations.

The NMI SAVE capability was very effective. I saved to a single disk twelve Spectrum games, and I still have room left. These were games like Pyjamarama, Scubadive, Ant Attack, etc. It even saved Avalon. Raid Over Moscow was saved, but I could not run it. To summarize, the DISCIPLE is a nice I/F, and it gives a user the biggest bang for his money. For availability and pricing write to QUANTUM COMPUTING. NOTE: For the hardware types who may want to know whether the DISCIPLE will have contention problems with their existing hardware, the I/F uses the following ports: 1B,5B,9B,DB,1F,3B,7B,BB,FB,FE. I am hoping that Anthony B. will send LIST a more thorough review than I could manage. How about it?

### SUPERCHARGE BASIC Compiler for the QL

Unacceptable product! I could not get the hang of the Lens Lock protection even for once. Yes, I know one LIST member, who does not even need the Lens Lock, and can operate the package. Frankly, I neither have the time nor the patience for dumping hard earned money, and buying headache for myself.

### QSPELL for the QL

Unacceptable product! Will not run with QUILL as advertised. If the dealer gives you the balooney that it will run with the English machine, that is not true either. I have equipped my machine with the JS ROM, and the package still does not run, giving me "channel not open" error report.

Oh, I almost forgot! When I was copying a file from one drive to the other drive on the DISCIPLE system, the COPY will be performed properly, but just at the end the system will RESET itself and the copyright message will come up. Some body in the meeting said that he read in a review that this is a feature!!!!!!

# LIST

## Letter Quality Printing

The Panasonic RK-T25 is a formed character printer/typewriter which can be purchased for around \$189. I asked Panasonic if it could be used as a communications terminal, but, as you can see, it can't. I have to respect Panasonic's wishes and not publish the DB9 printout they sent me, I can tell you though, that only pins 1 through 4, and 9 (ground) are used, and that 1, 2 and 3 are not data lines. This is not an RS 232 port, but uses TTL signal levels. Do not make a direct connection to the port with an RS 232 line. It might work, but the chances of ruining the printer on your port are too high to risk it. Instead, build your own RS 232 interface - the chip you need is available from Radio Shack for \$2.00 or so. It is called an RS 232 driver and converts TTL (Transistor-Transistor Logic) signals from the 0 to + 5 volt range to the -10 volt to + 10 volt range (typical) which characterizes RS 232 signals.

The RP-K1000 interface costs about 50 dollars. Best bet, if you want an interface, is to buy their S & P converter for about \$100. That way, you can use this typewriter with either an RS 232 or Centronics port.

Centerport, N.Y. 11721

## Matsushita Services Company

Division of Matsushita Electric  
Corporation of America

50 Meadowland Parkway  
Secaucus, New Jersey 07094  
201 348 7000

Executive Offices

November 18, 1986

P. Donnelly  
10 Idle Day Drive  
Centerport, NY 11721

Dear Mr. Donnelly:

We referred your letter to our engineering staff for consideration. Attached, please find information on the TTL signal. The RK-T25 will receive communication and cannot be used as a communication terminal. The demonstration is stored in ROM and cannot be reused. For your convenience we have listed information on obtaining a service manual.

RK-T25 Service Manual - GAD86045  
Technical Guide for Wheel Motor Drive Circuit - GAD860810TD  
Technical Guide for RK-T40 - 8504221500 (Useful information regarding RK-T25 in the Technical Guides.)

Service manual contains parts list, schematic and adjustments. Technical guides contain circuit descriptions. We recommend using the RP-K100 Interface Adaptor because we cannot assure proper operation if you build your own interface.

Please keep this information for your own personal use and we request not publishing the DB-9 pinout in your newsletter.

I hope these explanations have been helpful. If you have any further questions, please contact me.

Very truly yours,

*Regina Z. Spitzer*  
Regina Z. Spitzer  
Consumer Affairs Department

RH/js

Panasonic

Dear Sir:

I recently purchased a Panasonic RK-T25 electronic typewriter at LaBelle Camera in Syosset, New York. The RK-T25 was selected because of its advanced features, reasonable price and presumed Panasonic Quality.

Unfortunately, as I am sure the staff at LaBelle will confirm, I had to return two RK-T25's before getting one which worked properly. The two defective machines would randomly print letters out of line. Fortunately, after 3 trips to the store (1/2 hour each way) they were able to find a good machine. The third T-25 works fine, but frankly, I was a bit surprised to find two defective machines.

One of the features which influenced my decision to choose the T-25 over competitors models was the computer interface. I have a Brother EP-44, and found the RS 232 port on that machine to be quite useful. The EP-44 is, however, not a formed character printer like the RK-T-25. In reviewing the manual which came with the T-25, though, I find no reference to the pin-out on the DB-9 connector. Page 48 is ambiguous enough that it appears to say only a cable (RP-K111 or K110) is required for RS 232 operation. On page 59, we see the RP-K100, which appears to be a serial-to parallel converter. The pictures of the RP-K100 & 111 show serial cables with 25 pin connectors at each end, yet page 48 indicates the serial cable may be all one needs to use the T-25 on an Apple or IBM computer.

Can you please provide more detail on your interface? Specifically I would like to know:

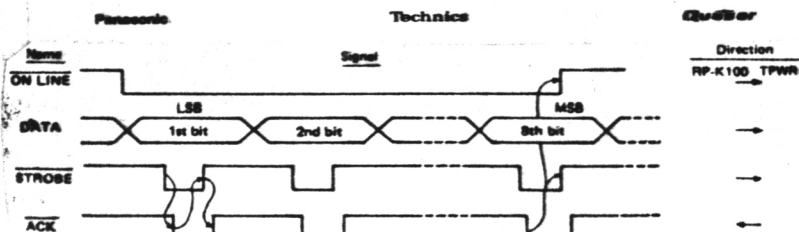
- 1) Pinout for the DB-9 connector
- 2) Signal type & levels to be expected (e.g., are they TTL, CMOS or RS 232) for each pin.
- 3) Current cost of the RP-K 110, K111, K100.
- 4) Whether the T25 can be used as a communication terminal. (The EP-44 can) That is, is the interface port actually one way?
- 5) Is a schematic or tech/repair manual available for the RK-T25?

Finally, I would like to know if there is a way to reutilize the demo space. This appears inaccessible to the user. If it is battery-backed-up CMOS, I would like to be able to use it (as a 10th phrase for example). If PROM, it might still be useful, to those with an EPROM programmer, as a place to put "boiler plate" (e.g. return address, stationery letter head, etc.). Can you tell me if there is a way to re-use this area?

I look forward to your response and thank you in advance for your help. Please advise if you have any objection to our publishing the DB-9 pinout in our user group newsletter.

Very truly yours,

P. Donnelly



## For Your Information.....

## SHOP TALK

We get a few inquiries about how often the heads of a disk drive should be cleaned. The standard answer of 200 working hours works fine for business, but it doesn't help the small business person or the home operator one bit. For most light users, cleaning the heads once a year should do it. For very dirty heads the drive has to be hand cleaned - a job best left to someone who knows how.

If you have a test-demonstration disk for your system, you should check the performance and the alignment after you clean the disk drive. This procedure is also recommended at regular intervals throughout the service life of a drive. If something doesn't look right, the sooner you do something about it, the less expensive the problem is to set right.

How do you know if there is a need to clean your disk drive? If you start experiencing load or save difficulties, find that some programs load and that others don't, or find that the drive functions fine for a while, but then fails or gets finicky, you are experiencing the first trouble signs. These symptoms could also point to mechanical troubles as well as dirt, especially when they are accompanied by problems such as your disks don't work in another drive of the same type. If cleaning doesn't clear the problems, the drive may have alignment or other hardware related problems.

Here are some suggestions for keeping your drive clean. Use non-abrasive disks. A polished look to the surface is going to be a lot easier on your drive than something that looks (and sounds) like sandpaper. Dust! Its bad enough that a layer of iron (from the wearing of the disk) builds up, but the dust in the room can get in and create havoc inside your drive. It doesn't help to leave your disks out of their sleeves. Dust can settle on them if left out and this dust eventually winds up on the head. This is especially true if you use disks as "flippys" - notch the other side on a single sided drive disk. You don't have to be a "Neat Freak", but a reasonable amount of

cleaning would keep your drive out of the repair shop. Do covers help? Yes, some, but if left on for a long time without use or inspection they tend to make the disk drive a high tech house spider nest!

Careful use and care will insure a long life for your disk drive.

tolerance of drives is much better when reading than when writing, so you may find that most of your problems go away if you only write to tapes when they're in the drive that formatted them.

You may want your drives properly aligned so that tapes can be swapped without problems. There are several firms that can do the job, including Capital (tel: (0222) 614401); Computafix (tel: (0276) 66266) which used to do warranty repairs for Sinclair; and Suredata (tel: (01) 951 0124). Several others were listed in the September 1986 issue of the specialist magazine, *QL World* (tel: (01) 222 9090).

Everyone I know agrees that late models of the QL, made by Samsung, are much more reliable than early UK-built ones, but I have had no trouble with the drives on my own machine, supplied in June 1984, despite heavy use. The view of QL users about microdrives does seem to vary widely, which might be explained by erratic quality control rather than design flaws.

I'm told that very early microdrive cartridges were unreliable because the plastic case was injection-moulded from the inside (where the tape goes) rather than from the outside. This apparently meant that loose plastic could end up inside the cartridge after assembly.

If this is true — and it matches my experience — you can tell the two types apart by taking the cartridge from its box and looking for the letters "RGD DESIGN" above the space for the label. Early, potentially bothersome, tapes did not carry this text. The problem was fixed during 1984 but some earlier tapes may still reach the shops — stock rotation was never Sinclair's strong point.

You can check the vintage of a QL by reading the 'build number' printed before the machine's serial number, underneath the computer. UK machines have a code starting with a D, followed by the month number in which the machine was made, counting from some time ambitiously early in 1984! Samsung machines appear to have a similar code starting with S.

Simon Goodwin  
of the ZIP Compiler  
SUPERCHARGE &  
TURBO COMPILER fame.

the directory 'does not exist'. I turned to you for advice after loading a file and finding two page 13s! Sometimes, failures will load on one machine, but generally problems are common to both. A copy of Quill seems to last about a month before it becomes corrupted. Is it Quill or the drive that's at fault?  
*JB Hall, Bury St Edmunds, Suffolk*

Both, probably — but problems can be minimised if you're careful about procedure. You can cure them altogether if you're willing to spend a little money.

Pison owns up to a number of 'indexing problems' on versions of QL Quill, and these explain most of the faults you have found. To be fair to the company, the problems don't usually crop up if you work with short files, rather than trying to cram everything into one big file held partly on tape and partly in memory. Your problem with Quill master cardbugs stems from incompatible microdrive alignments.

The latest version of Quill is number 2.36. Pison says that it will cure some of the problems you list, but it won't sort out mechanical microdrive snags. If you don't specify a medium name when you format a tape, the QL uses a character that normally displays as a hash pattern — meaning 'undefined' — if you type DIR in SuperBasic. Quill uses that particular character code to turn on underlining, so you can cure your problem by specifying an explicit name when you format the tape.

For example: FORMAT MDV1.WORK.TAPE upgrade from Pison (tel: (01) 723 9408) — version 2.36

costs £9. If you give up on Quill, the only alternative QL word processor I know of is The Editor from Digital Precision (tel: (01) 527 5493). This £24.95 package is much faster and more reliable than versions of Quill which I have seen, but it isn't as friendly and works best on a system with extra memory. It should declare a tiny, non-pecuniary interest in The Editor, as I wrote the compiler that encoded it.)

Microdrives are prone to alignment problems, especially if you move the machine a lot or habitually write to one particular tape with several drives. The

LIST  
ANNOUNCING  
QL Public Domain Library

In line with the policy of our user group to support the TS line of computers we have started a QL Public Domain Library. The 1st full cartridge (QLPD\_1) is already available. The second cartridge should be available by the time you are reading this. The 1st cartridge (QLPD\_1) has dealer demos to show off your computer as well as some useful utilities. QLPD\_2 beside having useful utilities, also has interesting SuperBasic programs so you can learn proper programming techniques. The policies governing the distribution of the software are:

- 1) You must be a member to receive the software.
- 2) You must contribute program(s) to the library in return for being able to receive the software. We of course prefer user written software. But at least for now, we can supply magazine articles (read a \$0.30 SASE), for you to type in. Please note that we are not interested in commercial copyrighted material. The User Group is not in the software piracy business.
- 3) Since microdrive cartridges are expensive, we cannot supply them. You send us a cartridge with your software contribution (make sure you have the return postage included), and we will send you the QLPD cartridge.
- 4) In order to give protection to software authors, who may have commercial aspirations in the future the software on QLPD may have copyright messages. Please do not remove these. It also means that the said software can't be released for commercial exploitation except by the author.

QL Quill v  
microdrives

I bought two Sinclair QLs after reading Tony Ashford's comments in the March 1986 issue of PCW ('The QL revisited'), which showed that microdrives can be reliable. In view of that article, could you please explain the following problems which afflict both machines when fitted both mains spike filters, running Quill 2.3.

Quill sometimes crashes after 'overflowing' to microdrive. Sometimes it just won't load or merge documents. Directory displays are sometimes underlined. On rare occasions, the program reports that a file listed in

Spectrum  
ROM bug

I have found a bug in the Spectrum ROM which I have not come across before. The problem involves the SCREENS function, which is meant to return the code of a character on the screen.

Assume that the screen is blank and Q=2. When I type in PRINT Q=1 AND SCREEN\$(5,5) "X", I get the reply 9.1391161E-30. I have not yet comprehended the philosophical meaning of such an answer. As the statement is a logical expression, I expected the answer 0 or 1.

*JS Youngman, Cottingham, Norfolk*

This bug crops up very rarely and is easy to avoid — once you know about it. In general the Spectrum ROM is remarkably bug-free, mainly because it was directly adapted from ZX80 and ZX-81 Basic. SCREEN\$ was a new function introduced on the Spectrum.

The problem occurs because, within ZX Basic, SCREEN\$ returns two copies of the resultant character rather than one. The 'space' character overwrites the result of the AND statement. The strange number you cite is the floating-point value corresponding to a space character!

There are two ways to avoid the bug. The first requires an EPROM programmer — copy the Spectrum's ROM, changing the byte at location 9597 from 193 to 201.

Alternatively read the screen at the start of a statement, like this: PRINT SCREEN\$(5,5) "X" AND Q=1, so that the extra character doesn't continue to get in the way.

This bug appears on all versions of the Spectrum. Sinclair didn't alter the ROM, although material was added for the Spectrum 128, which has preserved compatibility at the expense of retaining some small bugs. Microsoft has followed much the same policy with its Basic, whereas many other companies (Acorn, Oric, Atari) make frequent changes, both to fix serious bugs and add features. Unless a fault is major, changes tend to cause more problems than they solve.

The quirks of the Spectrum ROM are discussed in Ian Logan's book *Understanding your Spectrum*, published by Melbourne House.

The Problem  
with the \$29.00  
Remex Drives

Having Your Remex & Using It Too  
I have been running the notorious Remex RFD.480 5.25" drives for about five months in a Morrow MD-2 and have several observations about them that may help others who are stuck in by a "good deal."

1. The drives are incredibly sensitive to EMI (electrical interference). To see if this is a problem in your set-up, remove the drive from the computer's case and place it several inches away from anything. Alternately place a sheet of steel (not aluminum) between the drive and everything else. If this cures the problem, construct a steel shroud around the drive.

2. The precompensation supplied by some computers (notably Morrow Micro Decisions) is 250 ns. This appears to be more than the poor drives can handle. Recommended precomp is 160 ns or less. On Morrow Micro Decisions, the precompensation can be turned off for 40 track drives by selecting 80 track in byte 1 of the MTAB in the BIOS. This change will turn on precompensation only on tracks greater than 40, which, of course, do not exist. Check the BIOS supplied with the machine to find this location.

3. The maximum specified ripple on the 12 volt supply is 100 mV pk-pk. To help achieve this, I placed 2200 uFd across the supply to ground. Although I found no improvement in operation, it was comforting to have the value in spec.

4. As supplied, the speed adjustments on my drives seemed to be off slightly. While the drive motor's strobe ring is illuminated with a fluorescent light, adjust R30 (the pot on the lower back wall of the drive) until the strobe ring remains stationary.

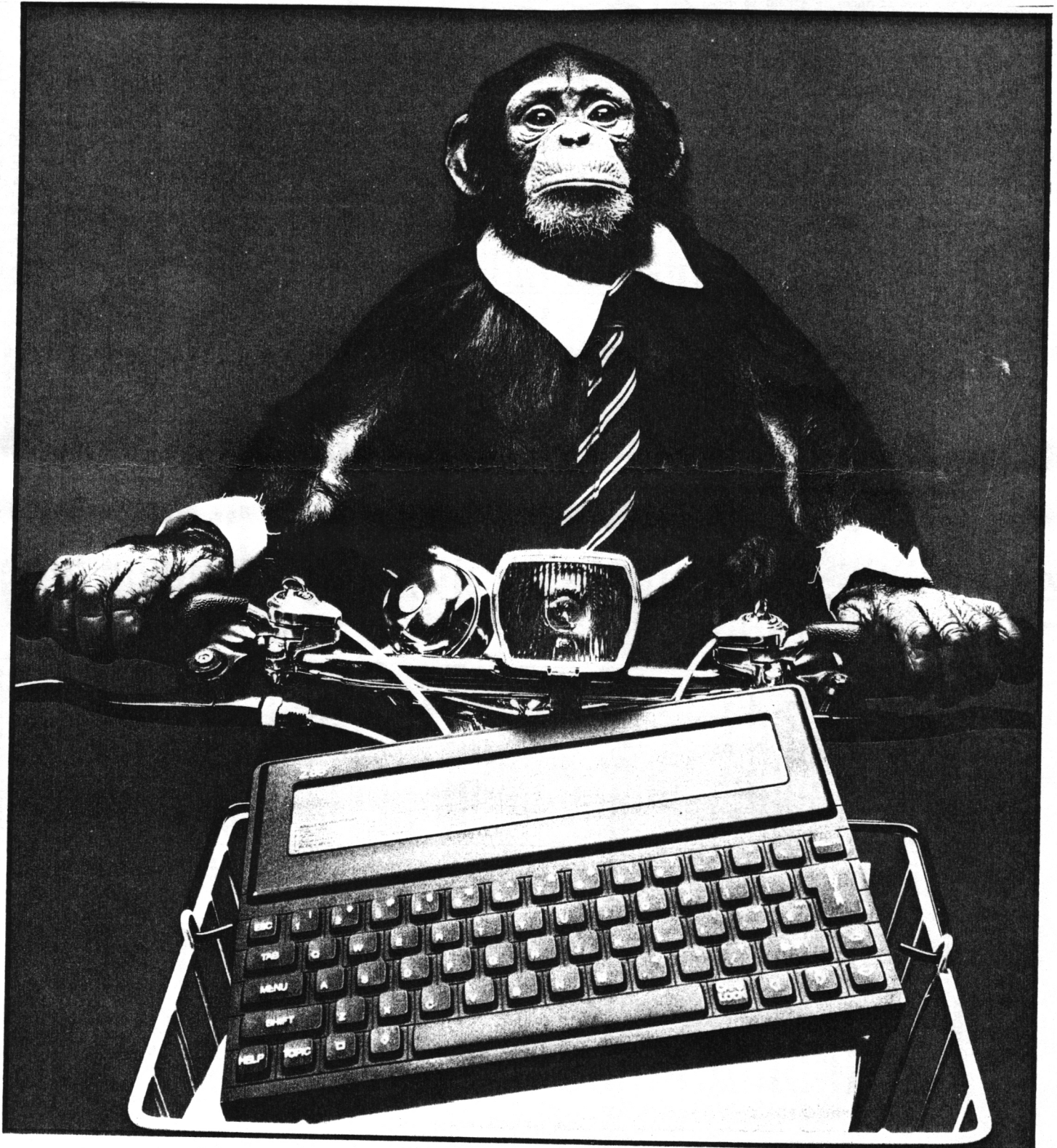
5. Don't adjust things if you can't measure the results.

6. Be sure the connections to motor control cards are good. Spread the pins on the male connector so they conduct well. If this connector is loose, the drive motor runs open loop and sounds like a possessed sewing machine.

7. Buy someone else's drives!  
Mark Silhanick  
121 Twin Creek Terrace  
Forest VA 24551



Sir Clive has announced another computer from his new company, Cambridge Computer. The new computer is known as Z88. It is mail order now in Britain, and deliveries are supposed to start in May. (Is that May '87 or May '88? Is there a hidden message in the naming of the computer the Z88?!) The unit is super portable having a weight of only 2 pounds. The keyboard is standard QWERTY keyboard. Reviews have already started complaining about the rubbery feel similar to Spectrum's. Sinclair people explained that it is a feature! It will make the key board noiseless in meetings. This reminds *me* of the salesman in a computer show who was selling the awful viewing angle and low contrast of an LCD display on a computer as a security feature. The Z88 is powered by a Z80 processor, with 128k software in ROM and 32k RAM standard. The display is the new supertwist LCD display, 8-lines by 100 characters.



**SIR CLIVE SINCLAIR RIDES AGAIN?**



```
*****
*  RANDOM ACCESS AND *
*  SEQUENTIAL DATA FILE*
*  FOR THE PORTUGUESE *
*  DISK SYSTEM        *
*  @1986 GEORGE GILDER *
*****
```

The following program is a data base program I have developed for use in my design business. Although specifically designed for my personal use I believe there are several features that would be of interest to you.

First of all, the program uses 140K of memory...the available memory of a single formatted disk. With another disk drive that could be doubled.

Most people I have spoken to are not familiar with the data features of our system. That is, the ability of the system to read or write to the data on the disk. We do not have to be hampered by the limitations of the 64K resident in our computers.

Unlike our basic programs where we use DATA lines or A\$ strings, the Data program actively uses (and accesses) the disk.

NOTE THE DISK ACTION WHILE RUNNING THE PROGRAM!

Let us first review some very basic rules to help you understand this program and make it easier to adapt a data file to your own needs.

The TOS reads and writes through channels. There are 16 channels to choose from and one should be chosen that is not being used.

CHAN#	SPEED	NOTES
1-4	Fast	Separ. buffers.
5-16	Slow	Share buffers

Before a using a channel it should be listed to know which one(s) are open. Let us choose channel n. (LIST#n) shows the status of a selected channel or for all channels (LIST#).

To create the data list, first DIM the Pathname as in line 30.

```
30 DIM #TOYLIST.DAT
```

In order to read or write to the channel, it must be opened.

```
40 OPEN #H;TOYLIST.DAT;r/L
```

```
H= 2          #H=channel no.2
r =access mode L=128=rec.length
```

THE 4 ACCESS MODES ARE:

- I Input (read only)
- O Output (write only)
- R Random (read or write)
- A Append (write & add to an existing file)

## LIST

Line 590 prints (writes to) channel #2

```
590 PRINT #2;k$-P$;AT n
```

K\$-P\$ is 128 characters long & is detailed in lines 520-570

A word about the string choices: Each string is started with a code letter (ie) C=Crafts, D=Dolls, etc. This allows me to access my mailing list by category. Because so many addresses were at 200 Fifth Avenue (Toy Building), by entering T at the address prompt, this address was automatically entered (line 550). Similarly Att: Mr. President is used by entering P at the prompt if the name was unknown. The phone number is again an example of entering compressed, coded strings. By using an initial prefix, I save hundreds of bytes. The code is simple. N=NYC=1212, L=LI=1516, etc. That's quite a saving!

The option "AT n" is used as a marker to identify the string sections.

Every time you are finished with ANY file, in ANY mode..... THE FILE MUST BE CLOSED! (Line 500)

A word about the menu- No. 1 reads a complete data string and through lines 900-995 organizes the data in correct order for printing labels. No. 3 reads a directory of Co. names preceded by their pointer numbers. No.2 allows listing by code. Prompts make selection easy. No.4 closes the channel & should be used if the program breaks with an error. No.7 nicely eddits the data with very friendly prompts. No. 8 is a search, but very slow (my fault, not the Disk's)

The Subroutine starting at line 8000, reads the small MC routine at line 0. The number of files used are compiled automatically as are the files remaining.

Although not used in this application, accessing the data by pointer number rapidly accesses the correct string

The descriptions are brief and in any article this short, are sketchy, at best. There is however enough information for you to adapt this for your own needs

If there are any questions regarding this or more direct applications, you can write me (SAE please): George Gilder Apt D-61,67-38 108th Street, Forest Hills,NY 11375

# LIST

```

0>REM FLASH CLS G THEN LN <>
1 REM *****
2 REM * RANDOM ACCESS AND *
3 REM * SEQUENTIAL DATA FILE*
4 REM * FOR THE PORTUGUESE *
5 REM * DISK SYSTEM *
6 REM *
7 REM * @1986 GEORGE GILDER *
8 REM *****
9 REM
10 LET i=1: LET n=1
15 GO TO 9010
20 LET trap=VAL "23729"
25 POKE trap,VAL "255"
30 DIM s"TOYLIST.DAT"
35 POKE trap,J-J
40 OPEN #H;"TOYLIST.DAT";r;k*
k+VAL "8"
50 RETURN
60 GO TO VAL h*k*
95 RETURN
99 REM *****
100 REM * read a record *
101 REM *****
105 GO SUB k+k: GO SUB w*h
110 FOR i=j TO n-j: POKE 23692,
255
115 PRINT #v
120 IF n>VAL "65535" OR n<J THE
N GO TO VAL "160"
125 INPUT #H;Y$;AT i
130 LET aa=1: GO SUB w-k*k
135 NEXT i
140 LET a=VAL "125": GO SUB w*V
AL "3"
200 REM *****
201 REM * SELECT DATA *
202 REM *****
205 CLS: PRINT "SELECT ONE O
R MORE CATEGORIES"; INK h*v$
210 PRINT "TAB h;"C CRAFTS"
TAB h;"T TOYS" TAB h;"G GAMES
" TAB h;"D DOLLS" TAB h;"H H
OUSEWARES" TAB h;"A ALL CATEGO
RIES"
215 INPUT t$
220 LET l=CODE t$: IF l>=97 THE
N LET t$=CHR$ (l-VAL "32")
225 GO SUB w*h: GO SUB k+k: PAU
SE k*k
230 LET aa=1: IF t$="C" THEN LE
T s$="CRAFTS"
231 IF t$="D" THEN LET s$="DOLL
S"
232 IF t$="A" THEN LET s$="ALL
CATEGORIES"
233 IF t$="T" THEN LET s$="TOYS
"
234 IF t$="G" THEN LET s$="GAME
S"
235 IF t$="H" THEN LET s$="HOUS
EWARES"
238 LET o=j: IF t$="H" THEN LET
o=VAL "200"
240 CLS: PRINT #v;"Category ";
s$;v$: FOR i=0 TO n-j
241 LET g=VAL "260": INPUT #H;
Y$;AT i
242 IF Y$(j)=t$ THEN GO SUB w-k
*k: GO TO g
245 IF t$="A" THEN GO SUB w-k*k
: GO TO g
260 NEXT i: LET a=h*k*k: GO SUB
w*VAL "3"
290 STOP
299 REM *****
300 REM * LIST DATA *
301 REM *****
305 GO SUB K+K: GO SUB w*h
310 LET s=j: LET d=k+k
312 CLS: FOR I=$ TO d
315 INPUT #H;Y$;AT i
320 PRINT #v; INK 2;I; INK 5;Y$
(VAL "21" TO VAL "5"*k)

```

```

325 IF i>=n-j THEN GO TO VAL "3
" *w
335 NEXT I
340 LET a=VAL "345": GO SUB VAL
"3" *w
345 LET s=s+k+k: LET d=d+k+k
350 GO TO 312
399 REM *****
400 REM * Close file *
401 REM *****
410 CLS: CLOSE #2: PRINT "Fil
e Closed": PAUSE k*k: GO TO w
499 REM *****
500 REM * write a record *
501 REM *****
505 REM INPUT "record number ";
n
510 GO SUB k+k
515 IF n>VAL "65535" OR n<J THE
N GO TO VAL "515"
520 CLS: DIM k$(1): DIM n$(k+k
): DIM m$(m): DIM A$(k+k): DIM b
$(K+H): DIM z$(VAL "7"): DIM P$(
K-J)
522 INPUT "Code: ";k$: IF k$="0
" THEN GO TO VAL "400"
525 INPUT "Pres. Name: ";n$
527 IF n$(j)="0" THEN GO TO 610
530 IF n$="P"+x$ THEN LET n$="A
tt: President"
540 INPUT "Co. Name: ";m$
545 INPUT "Address: ";a$
550 IF a$(j)="T" AND a$(H TO )=
x$ THEN LET a$="200 Fifth Avenu
e": LET b$="New York,N.Y.": LET
z$="10010": GO TO VAL "570"
551 IF a$(j)="B" AND a$(H TO )=
x$ THEN LET a$="1107 Broadway":
LET b$="New York,N.Y.": LET z$
="10010": GO TO VAL "570"
555 INPUT "City,State: ";b$
565 INPUT "Zip: ";z$
570 INPUT "Phone: ";p$
580 LET aa=0: LET y$=k+n+m+a
+b+z+p$: GO SUB w-k*k
590 PRINT #2;k+n+m+a+b+z$
+p$;AT n
595 LET n=n+1
599 GO TO VAL "520"
600 STOP
700 CLS: LET v=h: PRINT TAB k;
"EDIT DATA" v$
705 GO SUB k+k
710 CLS: PRINT "Data Number To
Edit? ";: INPUT f: PRINT f
714 INPUT #H;Y$;AT f
715 IF f=0 THEN GO TO VAL "400"
716 PRINT " INK VAL "6";Y$
717 DIM E$(7,10): LET e$(1)="Co
de": LET e$(2)="Pres.Name": LET
e$(3)="Co. Name": LET e$(4)="Add
ress": LET e$(5)="City,State": L
ET e$(6)="Zip": LET e$(7)="Phone
"
720 PRINT "1 ";e$(1),"5 ";e$
(5)
721 PRINT "2 ";e$(2),"6 ";e$(
6)
722 PRINT "3 ";e$(3),"7 ";e$(
7)
723 PRINT "4 ";e$(4),"8 Abort
"
724 PRINT INK h;#1;"Press Data
Number to Correct"
725 LET q$=INKEY$: IF q$="" THE
N GO TO VAL "725"
727 LET q=VAL q$

```

# LIST

```

730 CLS : DIM k$(1): DIM n$(k+k
): DIM m$(m): DIM a$(k+k): DIM b
$(k+h): DIM z$(VAL "7"): DIM p$(
k-j)
734 IF q=8 THEN PRINT "TAB k;
INK h;"NO CHANGE": PAUSE k*k: GO
TO VAL "400"
735 PRINT AT VAL "21",J-J: INK
2; "Enter Correct Data": INPUT W
$: PAUSE k*h
737 PRINT AT VAL "21",J-J: INK
h;"CHANGING ";E$(0); "PRESS ANY K
EY": PAUSE k*k
740 LET zz=VAL "775": IF q=1 TH
EN LET y$=w$+y$(h TO ): GO TO zz
742 IF q=h THEN LET n$=w$: LET
y$=y$(j)+n$+y$(k+k+h TO ): GO TO
zz
744 IF q=VAL "3" THEN LET m$=w$
: LET y$=y$( TO k+k+j)+m$+y$(VAL
"54" TO ): GO TO zz
746 IF q=4 THEN LET a$=w$: LET
y$=y$( TO 53)+a$+y$(VAL "74" TO
): GO TO zz
748 IF q=5 THEN LET b$=w$: LET
y$=y$( TO VAL "73")+b$+y$(VAL "9
4" TO ): GO TO zz
750 IF q=6 THEN LET z$=w$: LET
y$=y$( TO VAL "93")+z$+y$(k+k+j
TO ): GO TO zz
752 IF q=7 THEN LET p$=w$: LET
y$=y$( TO k+k)+p$: GO TO zz
775 PRINT y$ LEN y$;" Character
s /108": INPUT "IS THIS CORRECT"
;Q$
780 IF Q$="N" OR q$="n" THEN GO
TO VAL "720"
785 PRINT #H;Y$;AT f
790 GO TO VAL "710"
800 GO SUB k+k: GO SUB w+h
805 CLS : PRINT AT k,r;"Enter N
ame of Company": INPUT q$
806 IF q$="0" THEN GO TO VAL "4
00"
810 FOR i=1 TO n-1
815 INPUT #H;Y$;AT i
820 IF y$(VAL "22" TO VAL "21"+
LEN q$)=q$ THEN GO TO 850
825 NEXT i
830 GO TO VAL "400"
850 LET aa=1: GO SUB 900
860 PRINT #v: PRINT INK h;AT
k,r;"Press any Key to Cont.": PA
USE 0: GO TO VAL "805"
900 PRINT #v;i: IF y$(h TO h+h)
="Att" THEN GO TO VAL "910"
905 LET y$(h TO k+k+j)="Mr. "+y
$(h TO )
910 PRINT #v;y$(h TO k+k+j):
REM Name
915 PRINT #v;y$(k+k+h TO VAL "5
2"): REM Co Name
920 PRINT #v;y$(VAL "54" TO VAL
"73"): REM Address
925 PRINT #v;y$(VAL "74" TO VAL
"93"): REM City,State
930 PRINT #v;y$(VAL "94" TO k+k
): REM Zip
935 PRINT #v;y$(k+k+VAL "1" TO
): REM Phone
937 IF aa THEN RETURN
940 PRINT AT VAL "21",r;"IS LIS
TING CORRECT?"
941 LET q$=INKEY$: IF q$="" THE
N GO TO VAL "941"
945 IF CODE q$=13 OR q$="Y" OR
q$="y" THEN RETURN
950 GO TO a
995 RETURN
1000 CLS : PRINT AT H,r: FOR F=
1 TO 3: PRINT INK H;V$: NEXT F:
PRINT AT H+J,k/h: PAPER 2: INK 0
;"CLIENT LIST DATA MENU"

```

```

1005 LET F=K/H: PRINT "TAB F;"1
READ DATA" TAB F;"2 SELECT DA
TA" TAB F;"3 LIST DATA"
1010 PRINT TAB f;"4 CLOSE FILE
" TAB f;"5 WRITE DATA" TAB f;"6
STOP" TAB f; INK VAL "6";"7
EDIT DATA" TAB F;"8 NAME SEARCH
"
1020 PRINT AT VAL "21",J-J: PAPE
R 2: INK VAL "6";" PRINTER
IS "
1022 LET t=W+VAL "260"-(N-J)
1025 PRINT #1;"No.File=";n-J;TAB
16;"File Open=";t
1030 LET H$=INKEY$
1035 GO SUB VAL "8"*W: IF H$=""
THEN GO TO W+VAL "30"
1040 IF CODE H$<49 OR CODE H$>56
THEN GO TO W+VAL "30"
1050 GO TO VAL h$*k+k
2000 CLS : PRINT FLASH j: INK h;
AT k,k-h;"Hard copy? (Y/n)"
2010 LET q$=INKEY$: IF q$="" THE
N GO TO h+w+k
2020 IF q$="Y" OR q$="y" THEN LE
T v=3: RETURN
2030 CLS : LET v=h: RETURN
2040 GO TO g+w+h+k
3000 PRINT AT VAL "21",r: PAPER
h: INK VAL "6";"(Z)COPY (0)UIT
(C)ONT (M)ENU "
3010 LET h$=INKEY$: IF h$="" THE
N GO TO w+VAL "3"+k
3015 IF h$="M" OR h$="m" THEN GO
TO VAL "400"
3020 IF h$="0" OR h$="q" THEN GO
TO VAL "400"
3025 IF CODE h$=13 OR h$="C" OR
h$="c" THEN GO TO a
3030 IF h$="Z" OR h$="z" THEN CO
PY : GO TO a
3040 RETURN
4000 LET q$=INKEY$: IF q$="" THE
N GO TO g
4010 IF CODE q$=13 OR q$="Y" OR
q$="y" THEN PAUSE k*h: RETURN
4015 IF q$="n" OR q$="N" THEN PR
INT "What is correct data? ": IN
PUT G$
4020 RETURN
8000 LET ps=USR (VAL "5"+PEEK VA
L "23635"+VAL "256"*PEEK VAL "23
636")
8010 IF ps=VAL "32347" THEN PRIN
T AT K+K+J,VAL "17": PAPER H: IN
K VAL "6";"OFF " : RETU
RN
8015 IF ps=VAL "32603" THEN PRIN
T AT VAL "21",VAL "17": PAPER H:
INK VAL "6";"UNPLUGGED " :
RETURN
8020 PRINT AT VAL "21",VAL "17":
PAPER h: INK VAL "6";"ON
": RETURN
9000 LET y$="": SAVE *"datalist"
LINE 9010
9010 LET j=PI/PI: LET h=j+j: LET
r=j-j: LET k=VAL "10": LET m=VA
L "32": LET w=k+VAL "3"
9015 LET U$="
": DIM x$(k+k-j)
9020 PAPER 0: BORDER 0: INK 5
9040 CLS : LET q$="YOU WILL NOT
BE ABLE TO RUN THIS PROGRAM UNTIL
THE HARDWARE WRITEPROTECTION IS
REMOVED FROM DISK!"
9045 FOR i=1 TO LEN q$: PRINT q$
(i): BEEP .01,20: NEXT i
9050 PAUSE k*k/h: GO TO w

```



## CLIENT LIST DATA MENU

- 1 READ DATA
- 2 SELECT DATA
- 3 LIST DATA
- 4 CLOSE FILE
- 5 WRITE DATA
- 6 STOP
- 7 EDIT DATA
- 8 NAME SEARCH

PRINTER IS ON  
No.File=20 File Open=1240

## CLIENT LIST DATA MENU

- 1 READ DATA
- 2 SELECT DATA
- 3 LIST DATA
- 4 CLOSE FILE
- 5 WRITE DATA
- 6 STOP
- 7 EDIT DATA
- 8 NAME SEARCH

PRINTER IS ON  
No.File=20 File Open=1240

- 1 BLUG Inc.
- 2 The ERTL Company
- 3 Pines Of America, Inc.
- 4 Power Wheels
- 5 Playmate
- 6 Alexander Doll Company, Inc.
- 7 Famus Corporation
- 8 Gutman Cutlery, Inc.
- 9 Sam Weisman Sales Org. Inc.
- 10 Pastime Industries, Ltd.
- 11 Siku of America, Inc.
- 12 Yuletide Concepts, Inc.
- 13 Avalon Industries, Inc.
- 14 Cardinal Industries Inc.
- 15 Gund Inc.
- 16 Miller-Sperber Inc.
- 17 Ritvic Toy Corp.
- 18 Empire Of Carolina
- 19 Mel Posin Assoc., Inc.
- 20 Mighty Star Inc.

(Z) COPY (Q)UIT (C)ONT (M)ENU

LIST DATA

3

Att: President  
Pines Of America, Inc.  
200 Fifth Avenue  
New York, N.Y.  
10010  
N6758119

4

Att: President  
Power Wheels  
200 Fifth Avenue  
New York, N.Y.  
10010  
N6758119

5

Att: President  
Playmate  
200 Fifth Avenue  
New York, N.Y.

READ DATA

Data Number To Edit? 5

Datt: President Playmate  
venue New York, N.Y. 200 Fifth A 100  
10 N6918350

1 Code	5 City, State
2 Pres. Name	6 Zip
3 Co. Name	7 Phone
4 Address	8 Abort

EDIT DATA

SELECT ONE OR MORE CATEGORIES

- C CRAFTS
- T TOYS
- G GAMES
- D DOLLS
- H HOUSEWARES
- A ALL CATEGORIES

SELECT DATA



## 13. FUNCTION DISPATCHER

Located at location 6200H (or FA50H if D/FILE/2 is open), is a function dispatcher which will, when passed two arguments on the machine stack, perform various functions for applications and systems programmers.

The arguments passed to the function dispatcher are contained in a single word. Bits 0-14 contain the service code for the function you are requesting, and bit 15 is a jump/call selection flag. If bit 15 is set, the dispatcher will jump to the function you have requested. If bit 15 is reset, the dispatcher will call the routine and then return to its (the dispatcher's) caller.

Table 5 is a list of functions currently provided by the dispatcher.

Table 5  
T/S 2000 FUNCTIONS

FUNCTION	SERVICE CODE	ACTION
W_TAPE	0	Write a block to tape.
R_TAPE	1	Read a block from tape.
RD_BIT	2	Read a bit from tape.
R_EDGE	3	Read an edge from tape.
SLVM	4	General tape routine.
LOAD	5	Load.
MERGE	6	Merge.
SAVE	7	Save.
CHNG VID	8	Change video mode.
W_BORD	9	Write border color.
	10	Reserved.
	11	Reserved.
	12	Reserved.
	13	Reserved.
GET_STATUS	14	
GET_NUMBER	15	
BANK_ENABLE	16	Refer to paragraph 12 .
GOTO_BANK	17	
CALL_BANK	18	
XFER_BANK	19	
	20	Reserved.
	21	Reserved.
	22	Reserved.
	23	Reserved.
	24	Reserved.
UPD K	25	Scan keyboard.
PARP	26	Sound routine.
BEEP	27	BEEP command.
K_DUMP	28	COPY command.
SENDTV	29	Send char. to screen.
SETAT	30	Set print position.
STTBYT	31	Fix attribute byte.

# LIST

21

Table 5 (CON'T)

FUNCTION	SERVICE CODE	ACTION
R_ATT	32	Temp. Atts., Perm. Atts.
CLLHS	33	Clear lower half of screen.
CLS	34	Clear entire screen.
DUMPPR	35	Printer buffer sent to print.
PRSCAN	36	Send scan to printer.
DESLUG	37	Remove slugs from line buffer.
K_NEW	38	NEW command.
INIT	39	Initialize.
INCH	40	Input character.
SELECT	41	Select current stream.
INSERT	42	Insert bytes.
RESET	43	Reset calculator stack.
CLOSE	44	CLOSE command.
CLCHAN	45	Close channel.
OPEN	46	OPEN command.
OPCHAN	47	Open channel.
CAT	48	CAT command.
DELETE	49	DELETE command.
FORMAT	50	FORMAT command.
MOVE	51	MOVE command.
FLASHA	52	Flash char. in A to screen.
FINDL	53	Find BASIC line.
SUBLIN	54	Find sub-line.
RECLN	55	Record length.
DELREC	56	Delete record.
PUT LN	57	Send line to output.
SYNTAX	58	Check syntax.
EXECUTE	59	Execute line.
FOR	60	FOR command.
STOP	61	STOP command.
NEXT	62	NEXT command.
READ	63	READ command.
DATA	64	DATA command.
RESTBC	65	RESTORE bc.
RAND	66	RAND command.
CON'T	67	CON'T command.
JUMP	68	Jump to line.
FIX_U1	69	Fix 1 byte # from calc. stack.
FIX_U	70	Fix 2 byte # from calc. stack.
CLEAR	71	CLEAR command.
CLR BC	72	CLEAR bc.
GO SUB	73	GOSUB command.
CHKUSR	74	Free space left.
RETURN	75	RETURN command.
PAUSE	76	PAUSE command.
BREAK?	77	Break key pressed?
DEF	78	DEF command.
K_LPR	79	LPRINT command.
K_PRIN	80	PRINT command.
P_SEQ	81	Print sequence.
INPUT	82	INPUT command.

# LIST

22  
Table 5 (CON'T)

FUNCTION	SERVICE CODE	ACTION
I SEQ	83	Input sequence.
NOTKB?	84	Test CURCHL=KB.
COLOR	85	Adjust attributes sysvars.
HIFLSH	86	Adjust attributes sysvars.
SCRMBL	87	Screen address calculator.
PLOT	88	PLOT command.
PLOTBC	89	Plot c, b.
GET XY	90	Get x and y.
CIRCLE	91	CIRCLE command.
DRAW	92	DRAW command.
DRAW L	93	Draw line.
EXPRN	94	Expression Evaluator.
F SCRIN	95	Run time action for SCREEN \$
F ATTR	96	Run time action for ATTR.
RND	97	RND action.
F PI	98	PI action.
F INKY	99	INKEY action.
FIND N	100	Find variable.
PSHSTR	101	Push string.
PAEDCB	102	Push A, E, D, C, B.
LET	103	LET command.
POPSTR	104	Pop string.
DIM	105	DIM command.
STKUSN	106	Stack unsigned number.
STK A	107	Stack A.
STK BC	108	Stack BC.
ININT	109	Read/Stack Integer.
FP2BC	110	Get 16 bit #.
FP2A	111	Get 8 bit #.
OUTPUT	112	Output number on stack.
SUB	113	Subtract.
ADD	114	Add.
MULT	115	Multiple (int).
TIMES	116	Multiply (F.P.).
DIVIDE	117	Divide.
TRUNC	118	Truncate.
FLOAT	119	Force Int F.P.
INTDIV	120	Integer Divide.
INT	121	INT.
EXP	122	EXP.
LN	123	LN.
ANGLE	124	Angle calculator.
COS	125	COS.
SIN	126	SIN.
TAN	127	TAN.
ATN	128	ATN.
ASN	129	ASN.
ACS	130	ACS.
ROOT	131	SQR calculator.
TO THE	132	Exponentiation.
RDCH	133	Read character.
SENDCH	134	Send character.

# LIST

23

Table 5 (CON'T)

FUNCTION	SERVICE CODE	ACTION
WRCH	135	Write character
K_SCAN	136	Keyboard scan
P_LFT	137	Print cursor left
P_RT	138	Print cursor right
P_NL	139	Print newline
PUMES	140	Print message
K_CLS	141	CLS command
SCRL	142	Scrolling routine
F_PNT	143	Point action.

Cont'd next page

## Editor's Note:

As an example of the use of the Function Dispatcher, consider the use of PLOTBC routine. This routine is on page 215 of Jeff Mazur's book "Timex Sinclair 2068- Intermediate/Advanced Guide". The original example has an error in both the assembly as well as in the Basic Data statement, which causes the computer to crash. I will now quote Jeff Mazur:

" The routine performs the equivalent of the BASIC statement PLOT C,B. The command has four variations depending on the value stored in the system variable PFLAG(23697). Bit 0 of this variable is called XOR-CH; bit 2 is called INV-CH. Table 7 outlines the significance of these bits to the PLOTBC function. Normally this routine will cause a pixel to be set.

In the following listing a machine language routine that uses the Function Dispatcher and PLOTBC to draw a vertical line on the screen. This involves plotting 174 separate points from within a loop. Since the B register holds the vertical coordinate for the PLOTBC operation, we use the DJNZ instruction to create the loop. We, therefore, start by initializing the B register to 175 and loading the C register with the desired X-coordinate (in this case 127). We can load both registers simultaneously using the LD BC instruction. Next we begin our loop by saving the BC register on the stack. This is because the contents of this register will get changed after calling the Function Dispatcher. We then need to PUSH two sets of 2-byte zeros to set up the stack for the Dispatcher. We PUSH the service code onto the stack and we're ready to CALL the Function Dispatcher. After plotting the point indicated by register B and C, the routine returns to our POP BC instruction. This recovers the coordinates of the point just plotted. The DJNZ instruction lowers the Y-coordinate by one and then jumps back to plot the next point. After 174 points have been plotted, the routine returns to BASIC. By using DJNZ instruction, we do not plot a point at the zero Y-coordinate point.

```

LOOP  LD BC,7FAF ;Start at (127,175)
      PUSH BC   ;Save coordinates
      LD DE,0000 ;Set up
      PUSH DE   ;Function
      PUSH DE   ;Dispatcher
      LD DE,89  ; Get Service Code
      PUSH DE   ;and push it
      CALL 6200H ;Go to Fcn. Disp.
      POP BC    ;Restore coordinates
      DJNZ LOOP ; Do another point
      RET

```

## BASIC Listing

```

10 CLEAR 65000
20 FOR a=65001 TO 65020
30 READ d: POKE a,d
40 NEXT a
50 DATA 1,127,175,197,17,0,0,213
    ,213,17,89,0213,205,0,98,193
    ,16,239,201
The equivalent BASIC prog. is a on
liner:
10 FOR i=175 TO 1:STEP-1:PLOT 127,
: NEXT i

```



# LIST

The following paragraph describes some<sup>24</sup> of the more useful functions provided by the dispatcher.

## 13.1 W\_TAPE.

Write a block of data from memory to cassette tape.

This routine will write the number of bytes specified in the DE register from memory to TAPE. The IX register points to the first byte to save. This byte should be preceded by the byte in A which is used to identify the type of block:

Usually 0 for data  
-1 for header

The format of data on tape is a leader at 806.5-Hz, one cycle of 2040-Hz, and then data. The data is MS bit first. A zero bit is 1-cycle of 2040-Hz. A one bit is 1-cycle of 1020 Hz. Lastly comes the parity byte. This is the XOR of all data bytes -- formatted as a data byte. All frequencies are nominal.

This routine aborts with an Report Code D if the BREAK key is pressed.

## 13.2 R\_TAPE

Read a block of data to memory from cassette tape.

This routine reads in the number of bytes specified in the DE register from tape. The routine should be entered with the A register equal to the block type:

0 = data  
-1 = header

The IX register should point to the memory location into which the first data byte should be loaded.

The routine returns carry set if there were no errors. It returns carry reset if the checksums did not match, or the block consisted of fewer than DE bytes or the verify failed or the block type was wrong.

The routine will abort with an Report Code D if the BREAK key is pressed.

## 13.3 CHNG\_VID

Change video mode.

This function is used to "open" and "close" the second display file (and its corresponding attributes file - D\_FILE\_2 and A\_FILE\_2). If the second display file is closed, it should not be used by the applications programmer because data structures used by the Operating System currently overlay the needed memory area.

# LIST

To access this routine, you merely pass it a value in the accumulator. Valid values are shown in Table 6.

Table 6  
CHANGE VIDEO MODE ACCESS CODES

VALUE	FUNCTION
0	Normal video mode (D/FILE/1)
1	Second display page (D FILE_2)
2	Ultra-high-resolution color mode (D_FILE_1 and D FILE_2)
6	64-column mode - paper black.
8+6	64-column mode - paper blue.
16+6	64-column mode - paper red.
24+6	64-column mode - paper magenta.
32+6	64-column mode - paper green.
40+6	64-column mode - paper cyan.
48+6	64-column mode - paper yellow
56+6	64-column mode - paper white.

A system variable VIDMOD, keeps track of the current display mode (see Table 6 above).

Note that using the second display file means that the function dispatcher, and system stack will move to the top of memory. This means that you should only open the second display file if you are operating a 48K machine.

## 13.4 BREAK?

Read the BREAK key.

This routine looks directly at the keyboard to determine if both CAPS SHIFT and SPACE are being depressed (i.e.; BREAK). It returns carry reset if the BREAK key is depressed.

## 13.5 FIND\_N

Parse and find a specified variable.

This routine will skip CHADD over the identifier (variable name) specified. It will adjust bit 6 of FLAGS for the type of the variable as follows:

Set = Numeric  
Reset = String

# LIST

26

It will return with NC if the system is checking syntax, or if the variable was found when FIND\_N searched the variables area (VARS) for the specified variable.

It will return with Z if array. (i.e.; '(' present if variable not found or checking syntax and array or string if running and variable found).

If running (i.e., not checking Syntax), Then HL→ :

    Last character of identifier in record if found (NC),  
    First character of name in text if not found (C),

C := First character of name with bits 5 and 6 right, and bit 7 OFF.

If checking syntax, C gets bits 0 - 4 OFF, 5 and 6 correct (as above), and bit 7 OFF.

## 13.6 RDCH

Wait for a character from current channel.

This routine waits for a character from the current input stream. It places the character in A.

If the current device is a finite device, and an end of file arrives, then RDCH aborts with an Report Code 8.

## 13.7 INCH

Get character from current channel without waiting.

This routine reads a character from the current input stream without waiting. It returns C if the character is OK. It returns NC, NZ if end of file (for a finite device; i.e.: one like a disk file for which it can always be told if there are any more characters to come).

It will return NC, Z if no character yet (for an infinite device, like the keyboard).

## 13.8 SELECT

Select the current input stream.

The routine sets the current channel to be that for stream A.

# LIST

27

## Specified Streams

STREAM	ID NO.	CONNECTION
HID-K	-3	Keyboard
HID-S	-2	Screen
HID-R	-1	RAM insertion
COM-ST	0	Stream for commands
INP-ST	1	Stream for input data
PR-ST	2	Stream for PRINT
LPR-ST	3	Stream for LPRINT

Streams whose ID numbers are less than zero, are referred to as hidden. They are tied unalterably to specific channels.

### 13.9 SCRMBL

Screen address calculator.

This routine will set HL pointing at a byte in the primary display file, given BC holding PLOT-type coordinates. B should be holding the y-coordinate, and C should be holding the x-coordinate. The accumulator will hold the bit number in (HL) where the pixel is stored. (Zero for left-hand = MS end, one for right-hand = LS end.)

The routine preserves DE.

### 13.10 PLOTBC

Plot a point on the screen.

This routine performs the equivalent of PLOT c,b. It sets COORDS to the coordinates specified.

There are four options depending on two bits of PFLAG, as listed by Table 7. Bit 0 is XOR-CH. Bit 2 is INV-CH.

Table 7  
PLOTBC OPTIONS

XOR-CH	INV-CH	FUNCTION
0	0	Set bit.
0	1	Reset bit.
1	0	Invert bit.
1	1	Leave bit.

This routine adjusts the proper attributes byte for the primary display file.

END.



# LETTER

# LIST

To the Editor of L.I.S.T.,

First I want to commend you on the first issue that I was able to read the WHOLE THING! I do have a couple of BEEFS. First, I see on the mailing label that you feel that our dues are due. I thought that we were on an exchange basis with you. If I am in error, please forgive the crabing. Second, I see on page 22 (Jan-Feb, 87) that in the article on the MODEM Fix, that you have the author as Kurt A. Casby. You also say that you re-printed it from the PLOTTER. I have not seen the PLOTTER but the article (MODEM FIX) was originally in the JUNE RAMTOP and was written by ME! (James G. DuPuy) I would appreciate your correcting this in the next issue. I don't know where the mistake occurred, but I feel that when a person goes to the trouble to write an article, their name should stay attached to it! For that matter their address and phone # should be there too so that readers may ask questions and such.

As the Editor for the RAMTOP, I am fully aware of the problems with putting together a newsletter. and I feel that you are doing a GOOD JOB! I am very glad to see that you have improved the print quality. I have received many issues that I simply could not read quite a lot of due to reduction. We have resorted to using condensed print quite a bit also.

We have quite a few owners of the OLIGER disk system here. I would like to see a nation wide newsletter devoted to this system and the DOS that is used. Let me know what you think.

Sorry Jim for the mix up. My fault.

NAP

Sincerely,  
James G. DuPuy  
6514 Bradley Ave  
Parma, Ohio 44129  
216-661-4105

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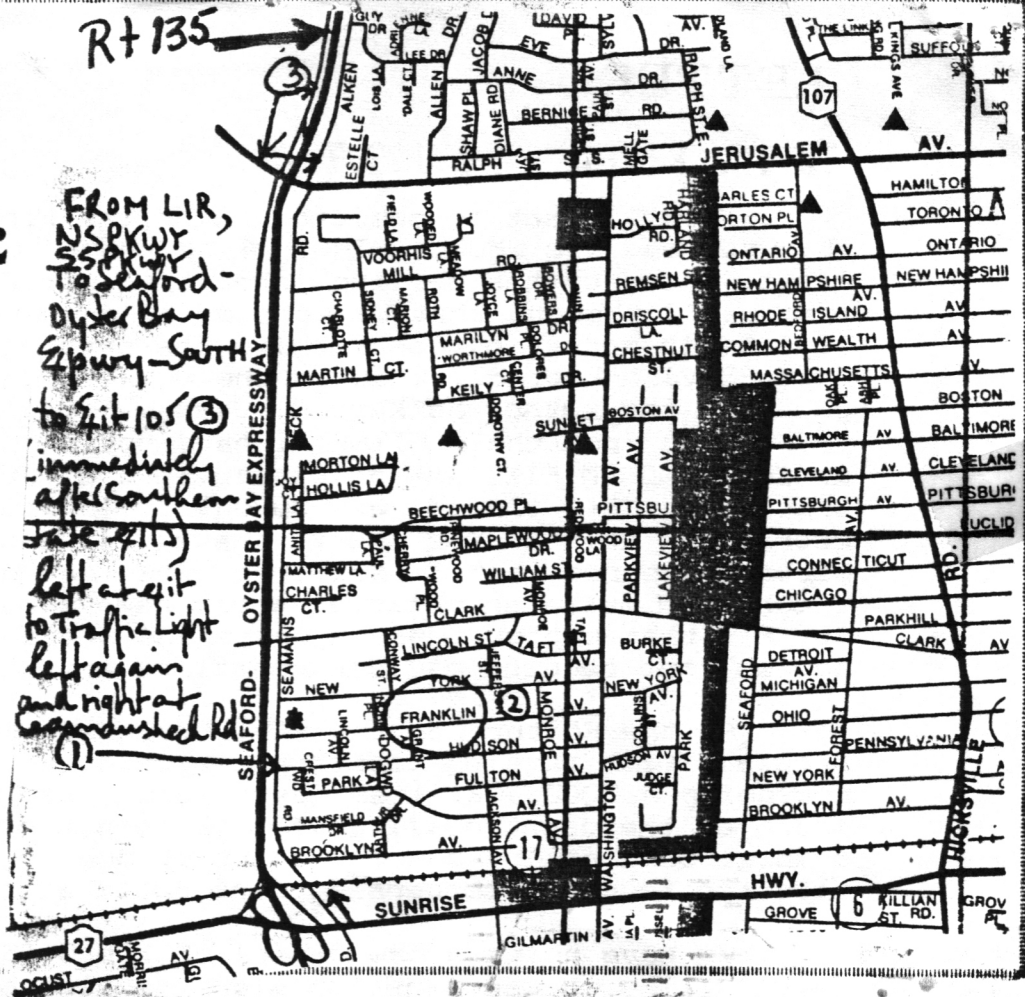
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